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A Review on Polyherbal Formulation *Saya Ennai* used in *Siddha* System of Medicine

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Abstract: *Siddha* medicine classifies the diseases mainly on the basis of derangement of 3 major humors namely *vatham*, *pitham* and *kapham*. One among them is *Eraippunoi*. It is attributed to the derangement of *Kapham* humor. *Saya ennai* is selected from the *Siddha* sastric text *Agathiyar Vaidiya Vallathi* 600. This review paper discusses about the ingredient of the *siddha* herbal medicine *saya ennai* and its pharmacological action, medicinal uses and its scientific review mentioned in various research studies. It was executed by scrutinizing *Siddha* literature from the library of National Institute of Siddha, databases such as PubMed Central, Google Scholar, National Library of Medicine (NLM), Science Direct, Embase, Mendeley etc. The drug is proved to be a harmless and effective drug in the treatment of Bronchial asthma through scientific evidences. Based on results of the review, *saya ennai* is having the potency of relieving the symptoms of *Eraippunoi* (Bronchial asthma).

Keywords: *Saya ennai*, *Siddha*, *Eraippunoi*, Bronchial asthma, Pharmacological

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Introduction

In *Siddha* system of medicine, diseases are classified into 4448 types (Uthamarayan, 2003). One among them is *Eraippunoi*. It is attributed to the derangement of *Kapham* humor (Maruthuvar and Kuppusamy, 2016). The amplified *kapham* humor alone or otherwise associated with either *vatham* or *pitham* humor, affects throat, nose, respiratory airways and lungs. Due to increased *kapham* mucus secretion is increased causing fever and other symptoms. "*Saya ennai*" is selected

from the *Siddha* sastric text *Agathiyar Vaidiya Vallathi* 600. The ingredients of the medicine are *Poovanthipattai*, *kasturimanjal*, *kadukkai*, *vanniver*, *karunjeerakam* and *erandaennai*. *Poovanthi Pattai* (*Sapindus laurifolia* Vahl) is having Expectorant (Murugesu, 2002), Anti inflammatory (Takagi *et al.*, 1980), Biosurfactant activities (Ghagi *et al.*, 2011); *Kathuri Manjal* (*Curcuma aromatic* Salisb) has Anti inflammatory activity (Pintatum *et al.*, 2020); *Kadukkai* (*Terminalia chebula* Retz) has

Table 1: Purification of Raw drug (Kannusamipillai, 2007)

Poovanthipattai	Wipe it with clean cloth and scrape the outer part of the bark gently
Kathurimanjal	Scrape the outer layer gently, make into pieces and dry them in sunlight
Kadukkai	Soak it in the rice water and remove the seed
Vanniver	Scrape the outer layer gently, make into pieces and dry them in sunlight
Karunjeeragam	Dry them in sun light and sauté them
Erandaennai	Keep it in an air tight container which is immersed in sand and dry it in sunlight for 2 days and filter it

Anti histamic (Amit *et al.*, 2023), Anti tussive activities (ul Haq *et al.*, 2013); *Vanni Ver* (*Plumbago indica* Linn) is having Anti inflammatory activity (Messeha *et al.*, 2017); *Karunjeeragam* (*Nigella sativa* Linn) has Anti asthmatic (Boskabady *et al.*, 2010), Anti inflammatory activities (Ikhsan *et al.*, 2018); and *Eranda Ennai* (*Ricinus communis* Linn) is having Anti asthmatic activity (Taur and Patil, 2011).

The ingredients in this medicine are having good bio surfactant, anti-histaminic activity, anti-asthmatic and expectorant activities which makes it a good option for the management of *Eraippunoi*.

Standard operating procedure for “saya ennai” (Agathiyar Vaidiya Vallathi 600):

Required ingredients: *Poovanthipattai* (*Sapindus laurifolia* Vahl); *Kasthurimanjal* (*Curcuma aromatic* Salisb); *Kadukkai* (*Terminalia chebula* Retz); *Vanniver* (*Plumbago indica* Linn); *Karunjeeragam* (*Nigella sativa* Linn); *Erandaennai* (*Ricinus communis* Linn) (Table 1).

Method of preparation:

The trial drug *Saya ennai* was prepared in the Gunapadam (pharmacology) Laboratory, National Institute of Siddha, Chennai, India. 3500 g (100 *palam*) of purified *poovanthi* bark was placed in a mud pot and 21.4 L (16 *padi*) water was added to it. It was boiled and reduced to (2 *padi*) and filtered. 2.6 L (2 *padi*) of *erandaennai* was added to the decoction. *Kathurimanjal*, *kadukkai*, *vanniver* were finely ground in a *kalvam*. The ground mixture was mixed with the oil and boiled till *mezhugupadham* was attained. Finally 35 g (1

palam) of *karunjeeragam* was added to the oil and preserved.

***Poovanthipattai* (*Sapindus emarginatus* Vahl)(Singh and Ali, 2019):**

Taxonomical classification: Kingdom : Plantae; Division: Tracheophyta; Class: Magnoliopsida; Order: Sapindales; Family: Sapindaceae; Genus: *Sapindus*; Species: *emarginatus*.

Morphology:

Leaves: 30-50 cm long, alternate, paripinnate; common petiole very narrowly bordered, glabrous; leaflets 5-10 pairs, opposite or alternate, 5-18 by 2.5-5 cm, lanceolate, acuminate, entire, glabrous, often slightly falcate or oblique; petioles 2-5 m long.

Bark: Bark is dark to pale yellow in colour, fairly smooth and having many vertical lines of lenticles and fine fissure exfoliating in irregular wood scales.

Phytochemicals and pharmacological activities: Phytochemicals and pharmacological activities are depicted in Table 2.

***Siddha* aspect:**

Synonyms: Ponnangaai, Pungumaram, Poovunthi

Properties:

Suvai (Taste): Kaippu, Thuvarppu

Thanmai (Nature): Veppam

Pirivu (Bio-Transformation): Kaarppu

Action: Expectorant, Anthelmintic

***Kasthurimanjal* (*Curcuma aromatic* Salisb) (Umar**

Table 2: Phytochemicals and pharmacological activities

Phytochemicals	Pharmacological actions
Hederagenin	Anti-Bacterial activity
platycodigenine	Anticancer Activity
oleanolic acid	Hepatoprotective Activity
β -glucosidegeraniol	Anti-Inflammatory Activity
1- hydroxylinalool	Bio surfactant

Table 3: Phytochemicals and pharmacological activities

Phytochemicals	Pharmacological actions
ar-turmerone, β -elemene, camphor, curcumol	Antitussive activity
1,8-cineole, linalool, borneol, camphene	Analgesic activity
ar-turmerone, borneol, curcumin	Anti-inflammatory activity
germacrone and curcumin	Antimicrobial activity
curcumol, demethoxycurcumin, germacrone	Antidiabetic activity
1,8-cineole, ar-curcumene, germacrone	Anticancer activity

et al., 2020):

Taxonomical classification: Kingdom: Plantae; Division: Tracheophyta; Class :Liliopsida; Order: Zingiberales; Family: Zingiberaceae; Genus: *Curcuma*; Species: *aromatica*

Botanical description:

Curcuma aromatic is an annual, erect herb with a characteristic light yellow aromatic rhizome and camphoraceous smell. The plant develops clumps of erect, unbranched leaf stems that on full growth can reach a height of about 1 m from the stout, underground rhizome and with enlarged colored bracts tipped with pink. The foliage dries in late autumn and the rhizomes remain dormant in winter; the rhizome, when mature, possesses a characteristic fragrance.

Phytochemicals and pharmacological activities: Phytochemicals and pharmacological activities are depicted in Table 3.

Siddha aspect:

Synonyms: Kathurimanjal

Properties:

Suvai (Taste): Kaippu

Thanmai (Nature): Veppam

Pirivu (Bio-Transformation): Kaarppu

Action: Stimulant, Tonic, Carminative

Kadukkai (*Terminalia chebula* Retz) (Muhammad *et al.*, 2023):

Taxonomical Classification: Kingdom: Plantae; Division: Magnoliophyta; Class: Magnoliopsida; Order: Myrtales; Family: Combretaceae; Genus: *Terminalia*; Species: *chebula*

Morphology:

Fruit: Fruit is simple and drupaceous. It is pendulous, 2 to 4 cm long and is mostly egg shaped. Oblong or elongate, ellipsoidal, wide at the broadest part. It is glabrous and obscurely or faintly 5 ridged that are 2 to 3 mm wide and 1 to 2 mm thick. The surface colour varies from light yellowish brown to a nearly uniform brown with yellowish markings or patches here and there. In

Table 4: Phytochemicals and pharmacological activities

Phytochemicals	Pharmacological Actions
Gallic and chebulagic acid	Anti-inflammatory
Gallotannin (1, 2, 6-tri-O-galloyl-β-D-Glucopyranose)	Anti-microbial activity
Chebulinic acid	anti-secretory and cytoprotective effects on gastric ulcers
Chebulagic acid	Anti-diabetic activity
ellagic, tannic, chebulinic acid and 2,4-chebulyl-β-D glucopyranose	Anti-cancer activity

some fruits, the basal portion is narrower and some what elongate or tapering. When the fruit is dry, it is bony hard, very thick and obscurely angled. Seeds are hard and pale yellow in colour.

Phytochemicals and pharmacological activities: Phytochemicals and pharmacological activities are depicted in Table 4.

Siddha aspect:

Synonyms: Amutham, Ammai, Arithaki, Arabi, Aviyatha, Amritha, Aparanam, Anthan, Anganam, Amalai, Alliyan, Resaki, Yemavathizyavi, Himavathi, Kadu, Kaayastha, Siyurutham, syuraki, Sirotam, Siva, Sethaki, Seya, Divya, Devi, Nandhini, Nechi, Pathiyam, Megam, Boothana, Paariyam, Vayatharam, Rarikkai, Vanadurki, Vijayavedhan, Rohini, Yeevaniga, Jeevanthi, Jeevapriya, Jeevya, Jeya.

Properties:

Suvai (Taste): Thubarppu, Kaippu, kaarppu, inippu, pulippu

Thanmai (Nature): Veppam

Pirivu (Bio-Transformation): Inippu

Action: Cardiac stimulant, Tonic

Vanni Ver (*Prosopis cineraria* (L.) Druce) (Khatri et al., 2010; Pareek et al., 2015):

Taxonomical classification: Kingdom: Plantae; Subkingdom: Tracheobionta; Superdivision: Spermatophyta; Division: Magnoliophyta; Class: Magnoliopsida; Subclass: Rosidae; Order: Fabales; Genus: *Prosopis*; Species: *cineraria* (L.) Druce – khejri.

Habitat: Tree of dry condition, found in sandy plains and grows abundantly on the dry, arid and exposed habitat like wasteland, cultivated lands, road sides and surrounding plains of hills.

Distribution: The most common occurrence of the prosopis is the dry places of the world it most commonly found at western Rajasthan, Delhi, Punjab and Gujarat state of the India.

Description: It is a tree and the length of the tree is up to 7 m with straight bole to height of 2 m and a round crown resulting from a lopping for fodder.

Phytochemicals and pharmacological activities: Phytochemicals and pharmacological activities are depicted in Table 5.

Siddha aspect:

Synonyms: sami, thaganam, neruppu

Actions: Demulcent, Stimulant

Karunjeeragam (*Nigella sativa* Linn) (Ikhsan et al., 2018; Manoharan et al., 2021; Pachiappan et al., 2023):

Table 5: Phytochemicals and pharmacological activities

Phytochemicals	Pharmacological actions
flavonoids and tannins 5-hydroxytryptamine Apigenin isorhamnetin-3-diglucoside l- arabinose quercetin, tryptamine (Khatri <i>et al.</i> , 2010)	Anti bacterial activity Anti hyperglycemic Activity Anti hyperlipidemic effect Skeletal Muscle relaxant Antihyperglycemic Activity (Pareek <i>et al.</i> , 2015)

Table 6: Phytochemicals and pharmacological activities

Phytochemicals	Pharmacological Actions
Carvacrol, t-anethole 4-terpineol octanoic acid capric acid benzene ethyl ester 2-monomyrustin	Antioxidant activity Anti-diabetic activity Antimicrobial activity Anti-cancer activity Anti-inflammatory property Anti-inflammatory property Cardioprotective activity

Taxonomic classification: Kingdom: Plantae; Superdivision: Spermatophyta; Division: Magnoliophyta; Class: Magnoliopsida; Subclass: Magnoliidae; Order: Ranunculales; Family: Ranunculaceae; Genus: *Nigella*; Species: *sativa*.

Morphology:

Shape: Pear-shaped with slightly curved tapered ends. One side is flat and the other is convex. The surface is slightly and regularly embossed.

Color: Black with hints of light grey.

Size: Length 4.1 cm, Width 2.0 cm. Transversal cross-section often hexagonal. Longitudinal cross-section is pear shaped.

Phytochemicals and pharmacological activities: Phytochemicals and pharmacological activities are depicted in Table 6.

Siddha aspect:

Synonyms: Aranam, Upakunjikai

Properties:

Suvai (Taste): Kaippu

Thanmai (Nature): Veppam

Pirivu (Bio-Transformation): Kaarppu

Actions: Carminative, Emmenagogue, Galactagogue

Eranda Ennai (Ricinus communis Linn)(Azadmard-Damirchi *et al.*, 2011; Jena and Gupta, 2018):

Taxonomical classification: Kingdom: Plantae; Order: Malpighiales; Family: Euphorbiaceae; Sub Family: Acalyphoideae; Tribe: Acalypheae; Sub Tribe: Ricininae; Genus: *Ricinus*; Species: *communis*.

Habitat: This plant is common and quite wild in the jungles in India and it is cultivated throughout India, chiefly in the Madras, Bengal and Bombay presidencies

Extraction of oil from seeds:

The oil is obtained from the seeds by two principal methods: pressing and solvent extraction. The extraction of oil from castor seed is by one or a

Table 7: Phytochemicals and pharmacological activities

Phytochemicals	Pharmacological Actions
Methyl ricinoleate, Ricinoleic acid, 12 octadecadienoic acid and methyl ester	Antioxidant activity
Saponins	Anti asthmatic activity, smooth muscle relaxant
Flavonoids	Hepatoprotective activity
Tannins, flavonoids, triterpenoids and sesquiterpenes	Wound healing activity

combination of mechanical pressing and solvent extraction. In mechanical pressing, the seeds are crushed and then adjusted to low moisture content by warming in a steam-jacketed vessel. Thereafter, the crushed seeds are loaded into hydraulic presses and they are pressed by mechanical means to extract oil.

Phytochemicals and pharmacological activities: Phytochemicals and pharmacological activities are depicted in Table 7.

Siddha aspect:

Properties:

Taste: Kaippu

Potency: Veppam

Division: Kaarppu

Actions: Anti-vatha, Laxative

The ingredients of the drug '*Saya ennai*' is employed in treating various medical conditions. It is bitter and astringent in taste and has hot potency. Hence it neutralizes *kapham*. The ingredients of *Saya ennai* are herbal and are of low cost. From the results of standardisation, it is found that heavy metal levels are BDL (Below detection level) which indicates that the trial drug is safe to administer. The primary chemical compounds in *Saya ennai* are Carvacrol, t-anethole, 4-terpineol, octanoic acid, capric acid, flavanoids and tannins, 5-hydroxytryptamine, Apigenin, isorhamnetin-3-diglucoside etc. The pharmacological activities of the drug showed Antioxidant activity, Anti-diabetic activity, Anti-

microbial activity, Anti-cancer activity, Anti-inflammatory property etc. '*Saya ennai*' has proved to be a safe and potent Siddha drug against Bronchial asthma.

Conclusion

Review of Siddha drug *Saya ennai* explains the pharmacological activity and medicinal uses which is vital for treating Bronchial asthma. Its antihistamine, bronchodilator properties helps in reducing hyper responsiveness. *Saya ennai* also acts as a biosurfactant. Hence, further clinical research has to be conducted on the Siddha drug *Saya ennai* for the treatment of Bronchial asthma.

Ethical Statement

No animal or microbes have been used or sacrificed for this study, hence Ethical Approval not required.

Author Contributions

Each author has contributed equally to the study's planning, analysis, writing, and editing. All authors have read and agreed to the published version of the manuscript.

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Conflict of Interest

The authors declare no conflicts of interest.

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